

## 1 CLAIMS

2

3 1) A valve system for use with a variable head of fluid,  
4 the valve system comprising a first diaphragm and a  
5 means for transferring a fluid pressure associated  
6 with the variable head of a first fluid to the first  
7 diaphragm wherein the position of the first diaphragm  
8 is controlled by the fluid pressure associated with  
9 the variable head of the first fluid.

10

11 2) A valve system as claimed in Claim 1 wherein when the  
12 valve system is deployed the first diaphragm is  
13 located above the variable head of the first fluid.

14

15 3) A valve system as claimed in Claims 1 or 2 wherein  
16 the valve system is connected to a supply line to the  
17 variable head of the first fluid such that the first  
18 diaphragm moves between an open position, wherein the  
19 first fluid is free to flow within the fluid supply  
20 line, and a closed position, wherein the first fluid  
21 is prevented from flowing within the fluid supply  
22 line.

23

24 4) A valve system as claimed in any of the preceding  
25 claims the first diaphragm comprises a blocking means  
26 to assist the first diaphragm move to the closed  
27 position.

28

29 5) A valve system as claimed in any of the preceding  
30 claims wherein the means for transferring a fluid  
31 pressure associated with the variable head of the  
32 first fluid comprises a compressible second fluid.

33

- 1 6) A valve system as claimed in Claim 5 wherein the  
2 compressible second fluid is contained within one or  
3 more tubes connected at a first end to the first  
4 diaphragm and positioned so that when in use the  
5 second end of the one or more tubes are located below  
6 the surface of the head of variable first fluid.  
7
- 8 7) A valve system as claimed in Claims 5 or 6 wherein  
9 the first diaphragm comprises an inflatable element  
10 so that the valve system can be employed as a flood  
11 barrier.  
12
- 13 8) A valve system as claimed in Claims 6 or 7 wherein  
14 the tube is connected to the first diaphragm via a  
15 diaphragm valve.  
16
- 17 9) A valve system as claimed in Claim 8 wherein the  
18 means for transferring a fluid pressure further  
19 comprises one or more chambers located between the  
20 diaphragm valve and the first diaphragm.  
21
- 22 10) A valve system as claimed in Claim 9 wherein the  
23 first diaphragm comprises an aperture that provides a  
24 means for communicating a sample taken from the  
25 supply line to the variable head of the first fluid  
26 to the one or more chambers.  
27
- 28 11) A valve system as claimed in Claims 9 or 10 wherein  
29 when the diaphragm valve moves to a closed position a  
30 pressure build up in the one or more chambers so  
31 causing the first diaphragm to move from the open  
32 position to the closed position.  
33

- 1 12) A valve system as claimed in any of the preceding  
2 Claims wherein the valve system further comprises an  
3 adjuster wherein the adjuster provides a means for  
4 varying the dependency of the position of the first  
5 diaphragm to the fluid pressure associated with the  
6 variable head of the first fluid.  
7
- 8 13) A valve system as claimed in Claim 13 wherein the  
9 adjuster comprises a plurality of apertures and a  
10 sleeve located on an outer surface of the tube  
11 wherein the sleeve provides a means for covering one  
12 or more of the plurality of apertures.  
13
- 14 14) A valve system as claimed in Claims 12 or 13 wherein  
15 the adjuster comprises a means for varying the  
16 resistance required to activate the diaphragm valve.  
17
- 18 15) A valve system as claimed in Claim 14 wherein the  
19 means for varying the resistance required to activate  
20 the diaphragm valve comprises a bias means and an  
21 adjustment screw wherein the position of the  
22 adjustment screw defines the resistance force applied  
23 by the bias means to the diaphragm valve.  
24
- 25 16) A valve system as claimed in any of Claims 3 to 15  
26 wherein the valve system further comprises an  
27 automatic cut off means so that in the event of  
28 mechanical failure the first diaphragm is moved to  
29 the closed position.  
30
- 31 17) A valve system as claimed in Claim 16 wherein the  
32 automatic cut off means comprises one or more  
33 sections of absorbent material such that when the

1 first fluid is incident on the absorbent material  
2 expansion occurs so as to cause the diaphragm valve  
3 to close.  
4

5 18) A valve system as claimed in any of Claims 8 to 17  
6 wherein the diaphragm valve comprises a plunger that  
7 assists movement to the closed position.  
8

9 19) A valve system as claimed in any of Claims 8 to 18  
10 wherein the diaphragm valve further comprises a lever  
11 gate that further assists the movement to the closed  
12 position.  
13

14 20) A valve system as claimed in Claims 5 wherein the  
15 means for transferring a fluid pressure further  
16 comprises a second diaphragm and actuating rod  
17 connected at first end to the second diaphragm such  
18 that the second diaphragm is located below the  
19 surface of the head of fluid and provides a means for  
20 varying the position of the actuating rod.  
21

22 21) A valve system as claimed in Claim 20 wherein the  
23 means for transferring fluid pressure further  
24 comprises a pin connected to a second end of the  
25 actuating rod, an aperture located within the first  
26 diaphragm and one or more chambers located below the  
27 first diaphragm such that movement of the actuating  
28 rod causes the position of the pin to move relative  
29 to the first diaphragm and the one or more chambers.  
30

31 22) A valve system as claimed in Claim 21 wherein the pin  
32 comprises one or more central sections of a first  
33 diameter that is smaller than a second diameter of

1 end sections of the pin such the position of the pin  
2 determines whether fluid from the supply can enter  
3 the one or more chambers.  
4

5 23) A valve system as claimed in Claims 21 or 22 wherein  
6 the first diaphragm is in the closed position when  
7 the pin is located so as to allow fluid to enter  
8 the one or more chambers.  
9

10 24) A valve system as claimed in Claims 21 to 23 wherein  
11 the first diaphragm is in the open position when the  
12 pin is located so as to prevent fluid from entering  
13 the one or more chambers.  
14

15 25) A valve system as claimed in Claim 24 wherein when  
16 the first diaphragm is in the open position fluid  
17 within the one or more chambers is expelled from the  
18 one or more chambers via one or more capillaries.  
19

20 26) A valve system as claimed in any of Claims 20 to 25  
21 wherein the means for transferring fluid pressure  
22 further comprises a second bias means to aid the  
23 first diaphragm move from the closed position to the  
24 open position.  
25

26 27) A valve system as claimed in any of Claims 5 to 26  
27 wherein the compressible second fluid is air.  
28

29 28) A valve system as claimed in any of Claims 5 to 26  
30 wherein the compressible second fluid is water.  
31  
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